

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF INDIANA
INDIANAPOLIS DIVISION

FILED
U.S. DISTRICT COURT
INDIANAPOLIS DIVISION

10 JUN 16 PM 4:28

SOUTHERN DISTRICT
OF INDIANA
LAURA A. BRIGGS
CLERK

UNITED STATES OF AMERICA,

Plaintiff,

v.

KEXUE HUANG,

a/k/a "John"

Defendant.

1:10-cr-0102 WTL-KPF

Cause No. 1:10 -CR-

INDICTMENT

The Grand Jury charges that:

BACKGROUND

At all times relevant to this Indictment:

Dow AgroSciences

1. Dow AgroSciences LLC (Dow AgroSciences) was a leading agricultural company providing agrochemical and biotechnology products, including agricultural crop protection chemicals such as insecticides. Dow AgroSciences was a wholly owned subsidiary of The Dow Chemical Company. The Dow AgroSciences corporate headquarters was based in Indianapolis, located in the Southern District of Indiana.

Organic Insecticide Products

2. Since approximately 1989, Dow AgroSciences has made substantial investments in research and development to produce a class of organic insect control and management products. For example, *spinosyns* were a family of organic insecticides based upon the soil bacteria *Saccharopolyspora spinosa* (*S. spinosa*) and *Saccharopolyspora pagona* (*S. pagona*).

Dow AgroSciences applied a proprietary fermentation process to the *spinosyns* to produce unique, commercially viable yields.

3. Through years of research and development, Dow AgroSciences enhanced the effectiveness and yield of their proprietary organic insect control and management products. Illustratively, the development of one particular strain typically spanned several generations in order to perfect and enhance its effectiveness. The class of organic insecticide products of Dow AgroSciences was produced and marketed throughout the United States and around the world.

Spinosyn Products

4. The Dow AgroSciences *spinosyn* products worked by attacking the insects' central nervous systems resulting in effective insect control and management. There were three primary Dow AgroSciences *spinosyn* products:

A. Spinosad was an organic insecticide generated from *S. spinosa*. Spinosad was used around the world on vegetables, tree fruit and nuts, cotton, soybeans, corn, cabbage, potatoes, tomatoes, and broccoli, among others. In 1999, Dow AgroSciences was the recipient of a Presidential Green Chemistry Challenge Award for its Spinosad insect control products produced through fermentation.

B. Spinetoram, a second *spinosyn* product, was a new member of the *spinosyn* class of insect management products developed by Dow AgroSciences. Spinetoram was projected by Dow AgroSciences to have a wider application than Spinosad based on its enhanced efficacy.

C. *Butenyl-spinosyn*, a third *spinosyn* product generated from *S. pagona*, was a naturally occurring new member of the *spinosyn* family of insecticides developed by Dow

AgroSciences. *Butenyl-spinosyns* was projected by Dow AgroSciences to have a wider application than either Spinosad or Spinetoram based on its enhanced efficacy.

Reasonable Measures

5. Dow AgroSciences employed several layers of security to preserve and maintain confidentiality and to prevent unauthorized use or disclosure of its trade secrets. These steps were enforced to maintain Dow AgroSciences' competitive advantage and to maintain the integrity of years of research and development with its organic insecticide products.

6. Some of the external physical security measures were:

- A. Limiting physical access, including restricted access to the Dow AgroSciences campus; manned, gated access to the campus; and identification and access badges intended to limit access to restricted areas on the campus; and
- B. Mandating visitor sign-in sheets and escorts.

7. Some of the internal security measures were:

- A. Requiring employee non-disclosure and other confidentiality agreements that extended beyond the length of employment at Dow AgroSciences;
- B. Recurrent training and instruction regarding the security and safeguarding of restricted and confidential business information;
- C. Publications and disclosures of restricted or confidential Dow AgroSciences information were prohibited without express company authorization.

- D. Data security policies;
- E. Restricting use of all confidential information to use in the performance of Dow AgroSciences company business;
- F. Limiting access to Dow AgroSciences proprietary information to employees or contractors with a need to know;
- G. Using restrictive agreements prior to shipment of proprietary information and material; and
- H. Requiring approval to access Dow AgroSciences strains stored in locked liquid cryo-storage tanks.

Dow AgroSciences Trade Secrets

8. Some of the Dow AgroSciences trade secrets (i) consisting of scientific information, including plans, formulas, prototypes, methods, techniques, processes, procedures and codes, tangible and intangible, stored, compiled and memorialized physically, electronically, graphically, photographically and in writing, and (ii) related to and included in products which were sold and distributed in interstate and foreign commerce, were the following:

Trade Secret	General Description
Trade Secret One	<i>S. spinosa</i> strain used to produce Dow AgroSciences Spinosad products
Trade Secret Two	Model <i>S. spinosa</i> strain used for research and development
Trade Secret Three	Plasmid used to produce <i>spinosyn</i> genes
Trade Secret Four	First <i>S. pagona</i> strain for <i>butenyl-spinosyns</i>
Trade Secret Five	Second <i>S. pagona</i> strain for <i>butenyl-spinosyns</i>
Trade Secret Six	<i>Pseudomonas fluorescens</i> strain
Trade Secret Seven	<i>Pseudomonas fluorescens</i> plasmid
Trade Secret Eight	<i>S. spinosa</i> fermentation protocol

Trade Secret Nine	Plasmid used to increase <i>butenyl-spinosyn</i> yield
Trade Secret Ten	Plasmid used to increase <i>butenyl-spinosyn</i> yield
Trade Secret Eleven	Spinetoram mutation disclosed in published article, "Recent advances in the biochemistry of spinosyns," published through Hunan Normal University ("HNU"), China
Trade Secret Twelve	Optimizing media disclosed in published article, "Recent advances in the biochemistry of spinosyns," published through HNU, China

Defendant Huang's Position, Assignment, and Obligations with Dow AgroSciences

9. Defendant KEXUE HUANG was a Chinese national and was granted legal permanent resident status in the United States.

10. Beginning in or about January 2003 until on or about February 29, 2008, defendant KEXUE HUANG, a/k/a "John" was employed at Dow AgroSciences as a research scientist. In or around 2005, KEXUE HUANG, a/k/a "John" was assigned to research and improve the family of *spinosyns*.

11. On or about January 27, 2003, defendant KEXUE HUANG, a/k/a "John" signed a Dow AgroSciences Employee Agreement which outlined his obligations in handling confidential information, including trade secrets. This agreement provided in pertinent part:

Confidential Information means trade secrets, know-how, and other information not generally known, relating to Dow AgroSciences' business which is disclosed to me or with which I become familiar during my term of employment with Dow AgroSciences. I shall not disclose to anyone or use, directly or indirectly, either during or after my employment, any Confidential Information of Dow AgroSciences, except with the written consent of an officer of Dow AgroSciences or as required in my duties as an employee of Dow AgroSciences. Upon termination of employment, I shall surrender to Dow AgroSciences any and all items in my possession or control that constitute Confidential Information and all other property of Dow AgroSciences, such as documents, equipment, samples, cultures, and models.

12. The defendant KEXUE HUANG, a/k/a "John", completed online training concerning Dow AgroSciences policies and procedures for creating and handling proprietary information. The online training included advisories regarding restricted and confidential classification of documents.

13. In or around December 2008, defendant KEXUE HUANG, a/k/a "John" co-authored an article entitled "Recent advances in the biochemistry of spinosyns." The article was published without Dow AgroSciences' authorization through Hunan Normal University, People's Republic of China and contained Dow AgroSciences' trade secrets. This article, published through Hunan Normal University, was based on work supported by grants from the National Natural Science Foundation of China.

Foreign Instrumentalities and Grant Applications

Hunan Normal University

14. Hunan Normal University (HNU), a foreign instrumentality of the People's Republic of China, was founded in 1938 and received priority in obtaining national funds.

15. Beginning at a time unknown, but not later than in or around 2007, defendant KEXUE HUANG, a/k/a "John" directed individuals known to the Grand Jury and associated with HNU to conduct research at HNU laboratories on Dow AgroSciences trade secrets.

National Natural Science Foundation of China

16. The National Natural Science Foundation of China (NSFC), a foreign instrumentality of the People's Republic of China, was founded in February 1986 as part of the National Natural Science Fund that promoted and financed scientific research.

17. On or about March 18, 2008, defendant KEXUE HUANG, a/k/a "John," submitted a grant application, that was approved, entitled "Novel Bioinsecticide Butenyl-Spinosyn Biosynthetic Gene Recombination and Modification," to develop butenyl-spinosyn high producing strains through the genetic engineering of Spinosad high producing strains. In the application, dated less than three weeks after his termination from employment at Dow AgroSciences, defendant KEXUE HUANG, a/k/a "John", represented that he had performed many tasks with respect to increasing the production level of *spinosyns* from the perspective of genetic engineering.

18. Defendant KEXUE HUANG, a/k/a "John", also applied for and received grants from the NSFC to support the work on which he based the December 2008 article "Recent advances in the biochemistry of spinosyns."

19. Defendant KEXUE HUANG, a/k/a "John", also submitted, participated in, and drafted additional grant applications for NSFC funding referencing unauthorized disclosure and use of Dow AgroSciences trade secret information involving or related to *spinosyns* production and development. Specifically: (a) on or about March 18, 2008, KEXUE HUANG, a/k/a "John", drafted and submitted an application entitled, "Novel Bioinsecticide Butenyl-Spinosyn Biosynthetic Gene Recombination and Modification"; (b) on or about March 18, 2008, Huang was a project team member for a grant application entitled, "Modification of Spinosad Gene Cluster and Isolation of Novel Insecticides"; and (c) on or about March 3, 2009, Huang drafted a grant application entitled, "Second Generation Spinosad—Spinetoram Research."

863 Program

20. The 863 Program (also known as the 863 Project and 863 Plan) was a funding plan created and operated by the government of the People's Republic of China, and was known as "the National High Technology Research and Development Program of China." The program was designed by leading PRC scientists to develop and encourage the creation of technology in the People's Republic of China.

21. In or around October 2008, defendant KEXUE HUANG, a/k/a "John", assisted with the drafting of an application for funding through the 863 Program to identify and make use of polyketide and related properties. *Spinosyns* were a member of the family of polyketide natural products.

Pseudomonas Fluorescens

22. *Pseudomonas Fluorescens* was a robust fermentation organism delivering high cell densities and product yields developed by Dow AgroSciences.

23. On or about September 17, 2007, defendant KEXUE HUANG, a/k/a "John", told an individual known to the Grand Jury working in the laboratory at HNU that he wanted to focus on three areas of research: (1) *butenyl-spinosyns/spinosyns* improvement, (2) *pseudomonas fluorescens*, and (3) polyketides.

24. On or about September 19, 2007, after this individual indicated an interest in working on *pseudomonas fluorescens*, KEXUE HUANG, a/k/a "John", indicated that he would soon be sending the individual a plasmid and strain and background information.

25. On or about September 21, 2007, defendant KEXUE HUANG, a/k/a "John", directed the individual to focus on the expression and purification of therapeutic and industrial enzymes in *pseudomonas fluorescens*.

26. On or about September 19, 2007, during the same period when he was communicating with this individual, KEXUE HUANG, a/k/a "John," accessed approximately 38 Dow AgroSciences confidential reports regarding *pseudomonas flourescens*, all materials beyond his assigned areas of research at Dow AgroSciences.

Directing Research in the People's Republic of China

27. Beginning at a time unknown to the Grand Jury and as early as September 2007, defendant KEXUE HUANG, a/k/a "John", directed research in the People's Republic of China on the same Dow AgroSciences confidential information, including trade secrets he was assigned to research in the course of his Dow AgroSciences employment. For example, some of the research and development activities directed by defendant KEXUE HUANG, a/k/a "John", occurred on or about the following dates:

No.	Date	Activity / Notes
A	September 17, 2007	Huang mentioned that he wanted to focus on three areas of research: (1) butenyl-spinosyns/ <i>spinosyns</i> improvement, (2) <i>pseudomonas fluorescens</i> , and (3) polyketides (Trade Secrets One through Twelve)
B	October 19, 2007	Huang reported that he would bring the strain and all necessary media to cultivate Trade Secrets Six and Seven
C	January 11, 2008	Huang provided shaker information "to establish the shake flask condition for <i>S. spinosa</i> and [to] find the good media supply manufacture from China" involving Trade Secret Two
D	January 12, 2008	Huang provided the "plasmid maps" (Properties One, Two and Three)
E	January 13, 2008	Huang provided directions on project to transform <i>S. spinosa</i> (Trade Secrets Two and Three and Properties One and Two)

F	April 2008	Huang advised that the strains he brought to Beijing were to be used to check production (Trade Secrets Six and Seven)
G	April 10, 2008	Huang received an Excel spreadsheet listing "plasmids you brought" (Trade Secrets One, Three and Properties One, Two and Three)
H	July 8, 2008	When asked which <i>S. spinosa</i> strain to use in a particular project, Huang directed another individual to use Trade Secret Two
I	September 9, 2008	Huang sent abstract application in which generating intellectual property rights was a stated research goal for <i>butenyl-spinosyns</i> (Trade Secrets Four and Five)
J	November 13, 2008	Huang received updated Excel spreadsheet listing material Huang brought back most recently (Trade Secrets One, Two, Four and Five and Properties One, Two and Three)
K	January 12, 2009	Huang requested comparison of two strains and provided protocol for <i>S. pogona</i> and noted he had brought another one back (Trade Secret Five)
L	June 8, 2009	Huang received report on fermentation and experimentation regarding Trade Secret Four and Five
M	February 26, 2010	Huang instructed another individual the project would focus on "butenyl-spinosyn strain improvement and Pseudomonas project" (Trade Secrets Four through Seven)
N	April 14, 2010	Huang provided instruction on a fermentation project, directing the use of Trade Secret Two

Production Facilities

28. Defendant KEXUE HUANG, a/k/a "John", sought information about manufacturing facilities in the People's Republic of China. Manufacturing facilities would allow defendant KEXUE HUANG, a/k/a "John", and others to compete in the same market as Dow AgroSciences.

COUNTS 1 Through 12

(Theft, and Attempted Theft, of Trade Secrets to Benefit a Foreign Government and

Instrumentality)

18 U.S.C. §§ 1831(a)(1), 1831(a)(4), and 2

29. The allegations set forth in Paragraphs One through 28 of this Indictment are hereby realleged and incorporated by reference as if set forth in full herein.

30. Between on or about the dates set forth below, in the Southern District of Indiana, and elsewhere, the defendant,

KEXUE HUANG,
a/k/a "John",

intending and knowing that the offense would benefit a foreign government and foreign instrumentalities, namely, the People's Republic of China, Hunan Normal University, the National Natural Science Foundation of China, and The 863 Program, did knowingly steal, appropriate, take, carry away, and conceal without authorization, and by fraud, artifice and deception obtain trade secrets, and attempt to do so, specific Dow AgroSciences trade secrets as set forth below:

Count	Dates	Trade Secret
1	December 2007 through February 29, 2008	Trade Secret One
2	December 2006 through February 29, 2008	Trade Secret Two
3	January 2008 through February 29, 2008	Trade Secret Three
4	September 2007 through February 29, 2008	Trade Secret Four
5	September 2007 through February 29, 2008	Trade Secret Five
6	January 2008 through February 29, 2008	Trade Secret Six

7	January 2008 through February 29, 2008	Trade Secret Seven
8	February 29, 2008	Trade Secret Eight
9	January 2008 through February 29, 2008	Trade Secret Nine
10	January 2008 through February 29, 2008	Trade Secret Ten
11	January 2005 through December 10, 2008	Trade Secret Eleven
12	January 2005 through December 10, 2008	Trade Secret Twelve

All in violation of Title 18, United States Code, Sections 1831(a)(1), 1831(a)(4), and 2.

COUNTS 13 Through 17

(Interstate and Foreign Transportation of Stolen Property – 18 U.S.C. §§ 2314 and 2)

31. The allegations set forth in Paragraphs One through 28 of this Indictment are hereby realleged and incorporated by reference as if set forth in full herein.

32. Between on or about the dates set forth below, in the Southern District of Indiana, and elsewhere, the defendant,

KEXUE HUANG,
a/k/a "John",

did unlawfully transport, transmit, and transfer in interstate and foreign commerce from Indianapolis, Indiana to the People's Republic of China, and to Germany, and elsewhere, stolen goods, wares and merchandise, of the value of \$5,000.00 or more, knowing the same to have been stolen, converted, and taken by fraud, as set forth in the separate counts below:

Count	Dates	Stolen Property	General Description
13	February 2008 through the present	Property One	Plasmid used for gene expression in <i>S. Spinosa</i>
14	February 2008 through the present	Property Two	Plasmid used for gene expression in <i>S. Spinosa</i>
15	February 2008 through the present	Property Three	Plasmid used for gene expression in <i>S. Spinosa</i>
16	February 2008 through the present	Property Four	<i>E. coli</i> strain used to increase <i>butenyl-spinosyn</i> yield
17	February 2008 through the present	Property Five	<i>E. coli</i> strain used to increase <i>butenyl-spinosyn</i> yield

All in violation of Title 18, United States Code, Sections 2314 and 2.

A TRUE BILL

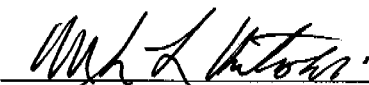
FOREPERSON

TIMOTHY M. MORRISON
United States Attorney

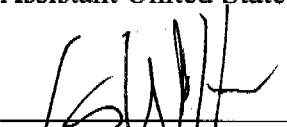
by:


CYNTHIA J. RIDGEWAY
Assistant United States Attorney

by:


MARK L. KROTOSKI
Assistant United States Attorney

by:


EVAN WILLIAMS
Trial Attorney
United States Department of Justice